

claim 1 wherein:

*SJP* said plurality of resistors are connected between said sound producer and a drive power supply potential;

said plurality of first switching means corresponds to a second semiconductor switch whose operation state is changed into an ON state in the case that said control signal is a binary control signal and a level of said control signal is equal to an "L" level; and

reverse current blocking means for blocking reverse currents flowing from said second semiconductor switch to said control means respectively is provided in a signal path of said control signal.

4. A sound producer volume control apparatus as claimed in claim 1 wherein:

one portion of said plural resistors is connected between said sound producer and the ground potential, and the other portion of said plural resistors is connected between said sound producer and a drive power supply potential;

said plurality of first switching means parallel-connected to one portion of said plural resistors correspond to a first semiconductor switch whose operation state is changed into an ON state when said control signal is a binary control signal and the signal level of said control signal is equal to an "H" level;

said plurality of first switching means parallel-

connected to the other portion of said plural resistors correspond to a second semiconductor switch whose operation state is changed into an ON state when said control signal is a binary control signal and the signal level of said control signal is equal to an "L" level; and

reverse current blocking means for blocking reverse currents flowing from said second semiconductor switch to said control means respectively is provided in a signal path of said control signal supplied to said second semiconductor switch.

5. A sound producer volume control apparatus as claimed in claim 2, or claim 4 wherein:

said first semiconductor switch corresponds to an NPN type transistor, or an N-channel type field-effect transistor.

6. A sound producer volume control apparatus as claimed in claim 3, or claim 4 wherein:

said second semiconductor switch corresponds to a PNP type transistor, or a P-channel type field-effect transistor; and said reverse current blocking means corresponds to an NPN type transistor.

7. A sound producer volume control apparatus as claimed in claim 1, 2, 3, 4, 5, or 6 wherein:

said sound producing pattern generating means includes comparing means for comparing a preselected signal with a reference voltage, and outputs a PWM control signal as said sound producing pattern signal; and

a duty ratio of said PWM control signal is changed in response to said reference voltage.

8. A sound producer volume control apparatus as claimed in claim 1, 2, 3, 4, 5, 6, or 7 wherein:

said sound producing pattern generating means AND-gates a signal having a predetermined duty ratio and a PWM control signal whose duty ratio is variable so as to produce said sound producing pattern signal.

Add A17